DOCUMENT RESUME

ED 149 532 EC 103 661

AUTHOR Field, Tiffany
TITLE Twelve-Month Follow-Up of Postmature and Respiratory Distress Syndrome Infants.
PUB DATE Mar 77
NOTE 7p.; Paper presented at the Biennial Meeting of the Society for Research in Child Development (New Orleans, Louisiana, March, 1977); Print is marginal in the original document and may not reproduce well in hard copy

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS Exceptional Child Research; Followup Studies; *Handicapped Children; *Identification; Infants; *Prediction

ABSTRACT

A 12-month followup study of 151 infants (46 preterm respiratory disease syndrome--RDS--Ss, 46 postterm postmaturity syndrome Ss, and 59 normal term Ss) was conducted to ascertain any early intervention needs and early predictors on 1-year performance, and to formulate a cumulative risk index which would identify those infants who were continuing at risk and who might benefit from very early intervention. In summary, the risk groups experienced some similar prenatal complications, some very different forms of difficult neonatal behavior as measured by the Brazelton Neonatal Scale, and some developmental delays in different areas (the postmature in early mental development and the RDS in early motor development). (SBH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED149532

U S DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

Twelve-Month Follow-Up of Postmature and Respiratory Distress Syndrome Infants

Tiffany Field, University of Massachusetts
Amherst, Massachusetts

and

H.H. Shuman, Baystate Medical Center
Springfield, Massachusetts

BEST COPY AVAILABLE

Paper to be presented at the biennial meeting of the Society for Research in Child Development, New Orleans, March 1977.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Tiffany Field

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC) AND USERS OF THE ERIC SYSTEM."

EC103661

A Twelve-Month Follow-Up of Postmature and Respiratory Distress Syndrome Infants

A critical problem for early intervention and a major reason for developmental follow-up of infants born-at-risk is the identification of those who will remain at risk. Some infants born-at-risk seem to experience a complete recovery, while others do not. Still others experience more subtle forms of perinatal risk, do not present medical complications and are not classified at risk, yet develop later deficits. To relate to the problem of predicting ongoing risk, we studied two groups of high-risk infants, a group with obvious perinatal complications comprised of pre-term respiratory distress syndrome (RDS) infants, and a group with a more subtle perinatal complication, the postterm postmaturity syndrome. The pre-term RDS infants were labelled high-risk due to their need for intensive care, while the group of postterm postmaturity syndrome infants were not considered at risk since they did not require intensive care. Yet they received very low scores on the Brazelton Neonatal Behavior Assessment Scale and thus were considered at least behaviorally at risk. The first year's development of these infants was compared to that of a group of normal term infants, and a risk index was formulated from significant predictors to identify those infants continuing at risk.

The literature is mixed on the developmental outcomes of the RDS and postmature groups. Survivors of mild RDS are typically reported to have normal IQs at age 4, although a four-year follow-up out of our center suggests that despite their normal IQs, they have an increased incidence of speech disturbance and symptoms of minimal brain dysfunction. The more recent survivors of severe RDS associated with very low birthweight and short gestation, requiring extensive mechanical ventilation have not yet reached age four in most samples

including ours. Thus the morbidity associated with the more severe form of RDS is yet uncertain.

Developmental outcomes reported for the post-term postmaturity syndrome baby range from no problems to delayed social development, reading disabilities, neurological handicaps and cerebral palsy. In some centers where the incidence of post-term delivery is low, this syndrome is hardly a recognized clinical entity. However, a number of babies appeared in our normal nurseries with symptoms of postmaturity such as parchmentlike skin, a long thin body, meconium staining and the look of a little old man. Since these babies also performed poorly on the Brazelton scale, we decided to follow them as a second high-risk group.

The purpose of this study, then, was to conduct a more comprehensive follow-up on these groups to ascertain any early intervention needs and early predictors of one-year performance, and to formulate a cumulative risk index which would identify those infants who were continuing at risk and who might benefit from very early intervention.

Method

Subjects

151 infants comprised the two risk groups (46 in each) and a normal term group (N 59). The pre-term RDS babies averaged 1600 grams birthweight, 32 weeks gestation, 5 days mechanical ventilation and 32 days hospitalization. The post-term postmaturity syndrome infants averaged 3600 grams birthweight, 42 weeks gestation, 2 postmaturity symptoms and 3 days hospitalization. Term infants averaged 3300 grams birthweight and 40 weeks gestation. Mothers were on the average multiparous, high-school educated, white, middle-class and 25-years of age.

Procedure

Several assessments were made at birth including the Brazelton Neonatal Scale and the Parmelee Obstetric and Postnatal Complications

Scales. At four months we used the Denver Developmental Screening Test, the Carey Temperament Questionnaire, a pediatric examination and growth measurements, and an assessment of mother-infant feeding and face-to-face interactions. At eight months we included the Caldwell Home Stimulus Inventory, the Carey Temperament Questionnaire, and the Bayley Scales for Infant Development. The one year measures were the Bayley Scales, the Ainsworth "Strange Situation" procedure, a pediatric examination and growth measurements. Assessment dates were calculated from the mother's expected date of delivery rather than the infant's real birthdate to adjust for gestational age differences.

Results

A multivariate analysis of variance and subsequent multiple comparisons suggested the following differences between the risk and normal groups: 1)both risk groups received inferior scores on the Parmelee Obstetric Complications Scale, both having experienced similar prenatal complications such as hypertension and toxemia: 2)the RDS group had lower and the postmature group higher birth measurements than the normal term group; 3)both RDS and postmature groups had inferior one-minute Apgar scores, but only the RDS had inferior 5-minute scores; 4) although the postmature may have experienced some perinatal anoxia related to placental dysfunction, their postnatal complications were no greater than the normal term group. Postnatal complications of the RDS, however, were relatively severe, netting them very poor scores on the Parmelee Postnatal Complications Scale; 5)both risk groups received inferior Brazelton scores but for different reasons. The RDS babies were typically floppy, hypotonic, difficult to arouse and alert, had weak reflexes, a flat affect and a raspy cry, although they rarely cried. Conversely, the postmature tended to be hyperirritable, extremely labile, hypertonic and difficult to pacify, having a"donkey's bray" cry. In a word, neither of these

babies were your Gerber baby; 6)on the Carey Temperament Questionnaire, mothers of both groups scored their babies as being difficult, and both groups of dyads appeared to have difficult feeding and face-to-face interactions; 7)on the four, eight and twelve-month developmental assessments (the Denver and Bayley scales) the postterm postmature group consistently received lower mental development and the RDS group lower motor development scores.

To formulate a cumulative risk index we did the following analyses. All assessment variables which were significantly correlated with one-year Bayley outcome scores were entered into a stepwise multiple regression to determine their relative significance and to partial out the effects of covariates. Neonatal variables including gestational age, birth measurements, the Parmelee Complications Scales and the Brazelton interactive and motoric process scores accounted for approximately 45% of the variance on the one-year Bayley outcome scores. Although the addition of four-month variables did not significantly add to the amount of explained variance, the eight-month assessments increased the amount of explained variance to 71%.

The ability of these predictors to discriminate between risk and non-risk infants with low and average one-year Bayely scores was then tested by a stepwise discriminant function analysis done in a stagewise fashion, i.e. neonatal variables alone, then neonatal and 4-month variables combined, etc. The results suggested that the Parmelee Complications scores, the Brazelton interaction and motor scores and the eight-month Bayley scores correctly classified 98% of the risk infants and 87% of the non-risk infants, the overall probability of misclassification being only 12%.

The risk index, then, is simply an equation based on the beta weights or classification functions provided by the discriminant analysis at each assessment period. If an infant's weighted score

is less than a given constant for a given assessment period, he is classified at risk for that period. The concept is somewhat similar to the cumulative risk score based on standardized scores developed by Parmelee etal for use with premature infants. Infants who are continuing to perform at low levels and who might benefit from an early intervention such as a neurological consult or physical therapy can be identified by a cumulative risk index. As might be expected, the cumulative risk index from each assessment period was a more efficient predictor of one-year outcome than were the individual assessment scores. To date, approximately 17% of our postmature and 24 % of our RDS infants have been classified at risk by our cumulative ris index, the infant with the worst risk index at one year just having been diagnosed as cerebral palsied.

Discussion

In summary, our risk groups experienced some similar prenatal complications, some very different forms of difficult neonatal behavior as measured by the Brazelton, and some developmental delays in different areas, the postmature in early mental development and the RDS in early motor development. This suggests somewhat different forms of intervention, perhaps a physical therapy kind of intervention for the RDS and a cognitive task-oriented intervention for the postmature.

The most promising finding, however, was the accuracy with which our risk index predictors identified infants who were continuing at risk. Having found some fairly efficient predictors of one-year outcome, a risk index comprised of those predictors appeared to classify with almost perfect accuracy those infants who were continuing at risk and who might benefit from very early intervention.